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AUTHOR Pace, C. Robert
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ABSTRACT

This report is a comprehensive account of the accumulated research on the measurement of quality of effort and its significance in understanding the achievement of college students with regard to the College Student Experiences questionnaire (Pace, 1979). Results are based on the responses of 12,000 undergraduate students from 40 different colleges over a 3 year period. The questionnaire contained 14 quality of effort scales, on which students rated themselves on items concerned with the use of college facilities and the use of personal and social opportunities. The other parts of the questionnaire included items that enabled researchers to determine relationships between quality of effort and achievement and among many elements that might help to explain those relationships. A major conclusion of the study granted the importance of all elements that influence "who goes where" to college. The study also found that, once the students got to college, what counted most was not who they were or where they were but what they did. "Quality" effort appears to be what counts in achieving in college. (JM)

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Achievement and the Quality of Student Effort

by C. Robert Pace
Higher Education Research Institute
Graduate School of Education
University of California, Los Angeles
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This report, prepared for the National Commission on Excellence in Education, brings together in one place a comprehensive account of the accumulated research on the measurement of quality of effort and its significance in understanding the achievement of college students. The development of the measures and their initial try-out was made possible by a grant from the Spencer Foundation, from January, 1978 through December, 1979. Over the four-year period 1978 through 1981 a number of reports about this line of inquiry have been prepared, mainly in the form of speeches at professional association meetings or for other transient or special occasions. A list of these reports is given at the end of the present paper. The present report for the Commission provides an overview of previous work and highlights the special relevance of student effort and initiative in the attainment of excellence.

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Achievement and the Quality of Student Effort

By C. Robert Pace

University of California, Los Angeles

"If students expect to benefit from what this college or university has to offer, they have to take the initiative." About 95 percent of undergraduates from all over the country agree with that statement. Students know that what they get out of college will depend, to a considerable degree, on what they put into it. They are right. Exactly how right they are, and what it means more specifically for the achievement of important educational goals, are the subjects of this paper.

Excellence, efficiency, productivity, accountability--these are all common words in much of the rhetoric about higher education today. But more often than not, that rhetoric has been one-sided. It assumes that leaving college before getting a degree is a sign of failure, when in many cases it may be a prudent and well-informed decision. It assumes that professors produce learning. It assumes that the college, not the national economy, controls the job market. It assumes that if you don't benefit from college, it's their fault. It assumes that the student is buying a product and is therefore entitled to a value for that product. It is a curious line of thinking because actually the student at a later point in time <u>is</u> the product!

Colleges are, of course, accountable for a lot of things. They are accountable for the resources and facilities, the programs and procedures, the stimuli and standards they provide for student learning and development. But surely the students are also accountable for the amount,

scope, and quality of effort they invest in their own learning and development, and specifically, in using the facilities and opportunities that are available in the college setting. Accountability for achievement and related student outcomes must consider both what the institution offers and what the students do with those offerings.

What is quality of effort? How is it measured? Having measured it, what do we know about its importance in accounting for quality of results? Then, although our current data come from higher education, what relevance might be projected for the quality of education at all levels?

All learning and development requires an investment of time and effort by the student. Time is a frequency dimension. Effort is a quality dimension in the sense that some kinds of effort are potentially more educative than others. Effort at what? The college experience consists of the events that occur in a college environment. The relevant experiences are ones that stem from events and conditions and facilities which the college makes possible, and which are intended to facilitate student learning and development. The most salient of these events and experiences are clustered around a number of fairly common behavior settings. A behavior setting is a place, a physical setting, in which certain types of activity typically occur. Obvious examples of such facilities in a college or university are classrooms, libraries, laboratories, cultural facilities, student unions, athletic and recreational facilities and residence units. Then there are other events and experiences which are not necessarily connected with a specific facility, but are nevertheless important opportunities for personal and social development. Obvious examples are contacts with faculty members, involvement

in clubs and organizations, experiences in writing, the breadth and depth of student acquaintances, opportunities related to self-understanding, and the general nature and level of student conversations. The facilities and opportunities just listed are the ones we selected for measuring quality of effort in their use.

How does one measure quality in the use of such facilities and opportunities? We devised brief activity checklists for each topic, to which students respond by indicating how often they have engaged in each activity during the current school year. The activities range from relatively common ones that require little effort to ones that require a greater investment of effort and that have a greater potential for influencing learning and development. Some examples will clarify the concept and the measurement of it.

Consider the library as a facility. A library has certain purposes and certain properties as a repository and a resource. To what extent do students use it to capitalize on those properties? Some students may use the library building simply as a convenient and quiet place to study materials they have brought with them. This usage of the facility has no basic connection with its purposes as a library. Others may use the library to read something that was explicitly assigned. This makes some use of the library as a repository. Still other students may discover that the library is a resource offering exciting avenues for exploration-examining indexes and guides, following up on various references, looking for materials under different headings, browsing in the stacks and taking out something because it looked interesting and having that lead on to something else. The quality of effort dimension with regard to library experiences is that of using the potential which a library has

to offer--greater degrees of independent exploration, learning how to find information one needs, and thereby increasing one's competence for independent learning.

With respect to course learning, such activities as making outlines from classnotes and readings or trying to explain the material to another person are higher level cognitive activities than merely taking notes or underlining points in a textbook. The quality dimension is the level of cognitive effort, with the higher levels contributing more solidly to the acquisition of knowledge and understanding.

For science laboratory, the underlying quality dimension runs from rather routine tasks and preparation to activities that involve efforts to improve laboratory skills, and more independent use of lab facilities. For the student union the check list of activites range from casual and informal use to more programmatic use such as attending events and participating in meetings. For residence units the quality dimension runs from general socializing to more personal exchanges involving such activities as helping and sharing and studying together and working on projects. In the use of cultural facilities (art, music, theater) the activities range from attending and talking about to efforts toward greater understanding as might come from seeking the views of experts and critics and from personal involvement. The checklist of activities for athletic and recreational facilities goes along a dimension from generally informal use as in exercise and games to greater efforts toward improvement and skilled performance.

The checklist of efforts to make contact with faculty members out of class ranges from fairly routine and casual--asking for information about assignments, or just saying hello or visiting informally after

class - to more serious contacts such as talking about ideas for a term paper or project, discussing career plans and ambitions, inviting criticism, and even discussing personal problems or concerns. To do these latter things requires more initiative, more effort, and may be more educative. With respect to clubs and organizations the activities range from awareness of events and organizations to attending events, discussing programs, working on a committee, etc. For experiences in writing the underlying quality dimension runs from a general concern with words and grammar and revision, pretty much by oneself, to actively seeking criticism from others and a greater concern for clarity and style. Activities related to self-understanding range from general curiosity about one's own behavior and others to more focused and expertly informed sources of self-understanding which one might get from reading articles or books, or taking a test to measure one's abilities or interests, or talking with a counselor or some other specialist about problems. With respect to student acquaintances the scale runs from breadth of acquaintances to greater depth of acquaintances involving serious conversations with people who differ a lot from oneself. The scale called Topics of Conversation ranges from personal and interpersonal topics of fairly immediate experience to intellectual and cultural topics concerning values and social issues. And finally, the scale called Information in Conversations measures the extent to which knowledge and expertise and persuasion are brought to bear in those conversations.

Overall, the checklists or scales are intended to provide a systematic, structured, and reliable inventory of the amount, scope, and quality of effort students put into capitalizing on the college experience. To each activity in these various categories, the student responds by

indicating "never," "occasionally," "often," or "very often." Never gets one point, occasionally gets two points, often gets three, and very often gets four. The student's score on a particular scale is simply the sum of those responses. A high score can only be obtained by engaging in the higher level activities, and therefore the score reflects the quality of effort and experience and not merely its frequency. With two minor exceptions, each scale consists of ten items. Subsequent analyses have demonstrated that these scales are good measures. They are highly reliable. All the items are discriminating. And each scale consists primarily of a single hierarchial dimension that ranges from low to high quality of effort with respect to the topic. These quality of effort scales may be thought of as analogous to a battery of achievement tests. The former measure what students put into their education; the latter measure what they get out of it.

The fourteen quality of effort scales - seven concerned with the use of college facilities and seven concerned with personal and social opportunities--form the major part of a questionnaire called College Student Experiences (Pace, 1979). The other parts of the questionnaire include items that enable one to determine relationships between quality of effort and achievement, and many elements that might help to explain those relationships.

The first part of the questionnaire consists of a series of items under the heading of "Background Information." There are two types of information in this section - first, information about the status of the individual, namely age, sex, marital status, race, and educational level of the parents; and second, information about the status of the individual in college such as year in college, whether one lives in the dormitory

or elsewhere, grades, major field, expectations about continuing for an advanced degree, amount of time spent on academic activities, amount of time, if any, spent working on a job, and the proportion of college expenses paid by parents or family. There is also an index of students' satisfaction with college consisting of the following two questions: "How well do you like college?" and "If you could start over again would you go to the same college you are now attending?"

Another part of the questionnaire is called "The College Environment." This consists of eight rating scales each dealing with a different aspect or characteristic of the college environment. The first four ratings ask students to indicate how much emphasis they feel is given at the college to certain goals or aspects of student development--emphasis on the development of academic, scholarly, and intellectual qualities; emphasis on the development of esthetic, expressive, and creative qualities; emphasis on being critical, evaluative, and analytical; and emphasis on the development of vocational and occupational competence. For each of these emphases there is a seven point rating scale, ranging from strong emphasis at one end to weak emphasis at the other. Then there are three rating scales that refer to personal relationships within the college environment--relationships with other students, relationships with faculty members, and relationships with administrative offices and officials. The student is asked to characterize those relationships at his or her college, again on seven point scale. The relationships with students range at one end from friendly and supportive, to uninvolved and alienated at the other end. The relationships with faculty range from approachable, helpful, and understanding at one end of the scale to remote, difficult, and impersonal at the other end. With administrative

officials the scale ranges from helpful and open minded to discouraging and unsympathetic. Finally, there is a scale described as general style of operation as an organization, ranging from flexible, adaptive, and considerate to rigid, resistant, and bound by regulations.

The rating scales are intended to capture in a brief fashion basically important qualities of the colleges environment: first, the extent to which it emphasizes certain objectives or goals, second, the nature and quality of personal relationships within the environment and particularly the supportiveness of those relationships, and finally, the style of operation of the organization as students perceive it.

The final section of the questionnaire is called "Estimate of Gains." This consists of eighteen statements of fairly typical and important objectives, such as vocational training, a broad general education, writing clearly and effectively, ability tc think analytically and logically, and so forth. For each of these eighteen goals the student is asked: To what extent do you feel you have gained or made progress (in college up to now)? The student can answer by indicating "very little," "some," "quite a bit," or "very much." These self-reported gains can be regarded as an indication of the extent to which students believe they are achieving important objectives of higher education; and one can then determine the extent to which high quality effort contributes to high attainment or progress toward related goals.

Since all of our data come from student responses to a questionnaire, we are dependent on the credibility of student self-reports. We have not objectively measured students attainment; we have asked them to indicate how much gain or progress they feel they have made toward the attainment of various goals. We have not directly observed, or filmed,

or recorded how often students engaged in various activities; we have asked them to indicate how often they have done so. Can we believe what they say? A great deal of social science research, and all questionnaire surveys, are based on self-reports. Fortunately, there is ample evidence to support the credibility of such data, especially of the type of data from the College Student Experiences questionnaire. Here are a few examples from past research: comparisons of students self-reported grades with Registrar's records show correlations of .90 and higher; self-reports by adults of many kinds of factual data (home ownership, have library card, etc.,) are typically 90% to 95% accurate; student reports of past achievements (in athletics, leadership, music, speech, drama, art, writing, science) are highly dependable; adults self-reports of activities engaged in "during the past year" (in political and civic affairs, cultural affairs, religion, and science) were found to be 85% identical with their reports six months later. In short, there is no reason to doubt the accuracy of student answers to the background information items in the College Student Experiences questionnaire; nor is there any reason to doubt their response to the activities in the quality of effort scales when they say they have "never" engaged in the activity. Some, in trying to recall their activities during the school year, may forget about certain ones--the responses may be 85% to 95% accurate instead of 100%; but when activities are reasonably specific and clearly described and refer to things students easily recognize, then their responses, based on past research, can be accepted as quite accurate and therefore credible.

There is another aspect of credibility which refers to the meaning of certain responses. We can believe it when they say they have or have

not engaged in a particular activity; but if they have, what do they mean by "occasionally," "often," and "very often?" While it is obvious that these are clearly different frequencies, how do students decide which of the three choices is appropriate for them? Judgments of this kind are typically made with some reference group in mind; and presumably the reference group would most likely be other students they know. So, does "often" at Amherst mean the same as "often" at UCLA? Answers to this and related matters have recently been reported (Pace and Friedlander, 1981) as follows: although there is considerable overlap between what is meant by occasionally, often, and very often, there is also a clear concentration of responses within each category and a clear direction of greater frequencies (i.e., number of times the activity has been engaged in) as one moves from occasional to often to very often; but the major differences in the meaning of the response categories are ones related to the topic or specific activity and that, given the same topic, differences between colleges and between different groups of students within colleges are minor.

A similar issue of interpretation exists in relation to students' self-estimates of gains on the eighteen statements of goals. Evidence to support the conclusion that these estimates of progress are accurate and valid is very convincing in those cases where objective comparative data are available. For example, we can accept as 100%, or very nearly 100%, accurate students identification of their major field. They surely know whether they are majoring in engineering or English or economics! We also know, from decades of records and requirements for graduation, that the major field, whatever it is, is the field in which they take more courses, and more courses at an advanced level, and spend more time at,

than any other field. Since we know this is true, the results on the quality of effort scales should reflect that truth. They do. The mean score for majors in humanities and in fine arts on involvement in art-music-theater activities is much much higher than the mean score of any other group. So also, the mean score on the Science Lab scale for majors in natural sciences is much much higher than the mean score of any other group. We also know, from several decades of data on comprehensive achievement tests such as the Area Tests of the Graduate Record Examinations, or the Undergraduate Assessment Program of Educational Testing Service, and The Advanced GRE Tests and the Major Field Tests of ETS, that students make their highest scores on those tests, or parts of tests, that are most closely related to their major field, or to their "area of interest." Since we know this is true, the results on the self-estimates of gains should reflect that truth. They do. Toward the objective "developing an understanding and enjoyment of art, music, and drama," 85% of the majors in fine arts felt they had made very much or quite a bit of progress. This percent is three times greater than the percent for science majors or social science majors. Toward the objective "broadening your acquaintance and enjoyment of literature," three-fourths of the humanities majors reported very much or quite a bit of progress compared with one-fourth of the science majors. Toward the objective "understanding the nature of science and experimentation," 84% of the science majors reported very much or quite a bit of progress, compared with 11% and 15% respectively for fine arts and humanities majors.

In our total set of data there are many other examples of congruent or validating relationships between known facts and students' ratings. Consequently, we can accept the self-reports of activities and the

self-estimates of progress as broadly credible, valid, and true to the facts. We have digressed to make these points because one often encounters skeptics who dismiss the results of self-reports as unreliable and hence unacceptable. That skepticism, in the case of the present data and of many other questionnaire surveys, is without foundation. Having made the point that there are solid grounds for claiming the accuracy and reliability of the evidence, we will now present that evidence.

By the end of spring 1981, about 12,000 undergraduates from 40 different colleges and universities had responded to the College Student Experiences questionnaire. This represents 4,000 for 11 colleges and universities in 1979, 5,000 from 19 schools in 1980, and 3,000 from 13 schools in 1981. Three of the schools were second-time users, so that the number of different schools is 40. In the spring of 1982, 30 schools are using the questionnaire and an additional 6,000 or more student responses are anticipated. With the exception of a few places where the questionnaire was given to a special group--for example, freshmen only, seniors only, etc.--the sample of student responses comes from a good cross-section of undergraduates. The 40 colleges and universities, classified in accord with the Carnegie Council's classification system, include 8 doctoral granting universities, 14 comprehensive universities and colleges (6 public and 8 private), 9 Type I liberal arts colleges, and 9 Type II liberal arts colleges. Comprehensive colleges and universities have a greater range of offerings than liberal arts colleges and also offer masters or first professional degrees in one or more fields, but do not offer doctoral degrees or advanced professional degrees. The difference between Types I and II liberal arts colleges is in the academic selectivity of the students, with Type I being the more highly selective.

The first set of results, based on an analysis of some 3,000 student responses at 11 colleges and universities in 1979, is, in many respects, the most dramatic. Subsequent analyses based on larger samples have merely confirmed these results. The question to be answered is this: given all the elements in the questionnaire--students background characteristics, their status in college, their satisfaction with college, their assessment of the college environment, and their scores on the various quality of effort (QE) scales--what best predicts their achievement with respect to the list of goals of higher education? For this analysis, the set of 18 goals has been grouped into four broad catagories, as follows:

1. Personal and Interpersonal Understanding

   Developing your own values and ethical standards

   Understanding yourself--your abilities, interests, and personality

   Understanding other people and the ability to get along with different kinds of people

   Ability to function as a team member

   Developing good health habits and physical fitness

2. General Education Objectives

   Gaining a broad general education about different fields of knowledge

   Developing an understanding and enjoyment of art, music, and drama

   Broadening your acquaintence and enjoyment of literature

   Writing clearly and effectively

   Becoming aware of different philosophies, cultures, and ways of life

3. Intellectual Competencies

Ability to think analytically and logically

Ability to put ideas together, to see relationships, similiarities, and differences between ideas

Ability to learn on your own, pursue ideas, and find information you need

Acquiring background and specializations for further education in some professional, scientific, or scholarly field

4. Understanding Science

Understanding the nature of science and experimentation

Understanding scientific and technical developments and their applications in society

Quantitative thinking - understanding probabilities, proportions, etc.

Students reported progress toward each of the objectives in these four groupings were added up to give an estimate of progress toward the more general objective defined by the group category. These four categories of achievement are then used as criteria of attainment, to be predicted or explained by all the information we have about students, environments, and quality of effort. The statistical procedure is called stepwise multiple regression. This simply means that the computer program first identifies the variable that has the largest relationship with the criterion, then the variable that has the next largest relationship, etc., until adding more variables contributes little or nothing more (1% or less) toward accounting for the performance on the criterion.

Here are the results from this analysis showing the relative magnitude of relationships or predictions of the criteria.

Achievement	Multiple R	R^2
Personal/Interpersonal Understanding		
QE: self understanding	.38	.14
QE: athletic facilities	.48	.23
Environment: student relationships	.54	.29
Satisfaction with college	.56	.31
QE: conversation topics	.57	.33
All other variables	.62	.39
Intellectual Competencies		
QE: course learning	.36	.13
Satisfaction with college	.45	.20
Year in college	.49	.24
Environment: critical emphasis	.54	.29
QE: conversation level	.56	.32
QE: science laboratory	.58	.34
Environment: student-faculty relationships	.59	.35
All other variables	.63	.40

	Multiple R	R^2
General Education Objectives		
QE: art, music, theater	.43	.18
QE: writing	.50	.25
Environment: critical emphasis	.55	.30
Environment: student-faculty relations	.57	.33
QE: conversation topics	.59	.35
Major field: Fine Arts - Humanities	.61	.37
All other variables	.65	.42
Understanding Science		
QE: Science laboratory	.52	.27
Major field: natural sciences - math	.56	.31
Sex (male)	.59	.34
QE: course learning	.61	.37
Major field: humanities - fine arts (negative)	.63	.40
All other variables	.68	.46

What these figures show is quite clear. In relation to every one of the four main categories of achievement, one or more of the quality of effort scales (QE) makes the greatest contribution toward explaing that achievement. The numbers under the column labelled R^2 are really percentages--that is, they show the percent of the variance on the criterion that is "accounted for," or more simply, "when you know these

things this is how much of the result you have been able to explain or predict."

Another way to highlight the contribution that quality of effort makes in predicting achievement is to put all the variables into the computer in a predetermined sequence: first, put in all the students' background or status variables; second, put in all the college status variables; third, put in all the environment ratings; and finally, after all these commonly utilized variables have contributed as much as they can to explaining achievement, put in the quality of effort variables to see whether they add anything to explaining the achievement. Here are the results of that pattern of analysis:

Achievement	Multiple R	R^2
Personal/Interpersonal Understanding		
Student status variables	.36	.13
College status variables	.47	.22
Environment ratings	.49	.24
Quality of Effort Scales	.62	.39

Intellectual Competencies	Multiple R	R^2
Students status variables	.10	.01
College status variables	.53	.28
Environment ratings	.55	.30
Quality of Effort Scales	.63	.40

	Multiple R	R^2
General Education Objectives		
Student status variables	.14	.02
College status variables	.48	.23
Environment ratings	.55	.30
Quality of Effort scales	.66	.43
Understanding Science		
Student status variables	.23	.05
College status variables	.56	.34
Environment ratings	.60	.36
Quality of Effort scales	.68	.47

These data show that, before considering the quality of effort measures, one can account for somewhere between 24% and 36% of the result on the criterion. This is almost exactly what many past studies have shown. But, when the quality of effort measures are added, one can now explain from 39% to 47% of the performance on the criterion--a substantial increase in our understanding, from 10 to 15 percentage points better than past research has typically been able to explain.

The results just shown lead to a very significant conclusion, one that differs from much prior research which has held that student characteristics and family background are the most important determinants of achievement. The new conclusion is this: granted the importance of all the elements that influence who goes where to college, once the students get there what counts most is not who they are or where they are but what they do. Prior research has not included what turns out to be the

most influential variable--the quality of effort that students themselves invest in using the facilities and opportunities for learning and development that exist in the college setting. Now that "quality of effort" has been included, better explanations and new conclusions emerge.

In addition to the above general relationship between effort and attainment, there are some analyses that show the special diagnostic significance of quality of effort and lead to further refinements in prior conclusions.

It's true, for example, that gains in academic/intellectual competencies are related to students' grades--the better the grades, the larger the gains. But that's not the whole truth. The whole truth is that students who have high scores on the quality of effort scales related to academic/intellectual experiences (course learning, library, writing, and contacts with faculty) make much greater gains than students whose quality of effort scores are low, regardless of their grades. In fact, B-students with high quality of effort scores make more progress than B+ students with low quality of effort scores.

It's true that living on campus versus living at home or elsewhere is positively related to students' satisfaction with college. But it is not the whole truth. The whole truth is that freshmen who live in the dormitory or fraternity /sorority but put a low quality of effort into using the residence facility might as well have stayed at home so far as satisfaction with college is concerned.

It's true that students who expect to continue their education in graduate or professional school have higher gains scores on academic/intellectual competencies and higher effort scores on academic/intellectual experiences than students who do not plan to continue beyond the bachelor's

degree, and that outcome scores and effort scores are typically greater as one moves from freshman to senior year. But again, that's not the whole truth. The whole truth is that, for every year in college, students who do not plan to continue but nevertheless have high quality-of effort scores, make higher scores on the outcome measures than students who do plan to continue but have low quality of effort scores.

It's true that "time on task" has been shown in many research studies to be a very important factor in explaining achievement. But compared to quality of effort, time on task is a relatively weak explanation. In the present study, two definitions are similar to the idea of "time on task." One is how long the students have been in college; the other is how many hours a week the students usually spend on activities related their school work. Our analyses confirm the importance of time, but also the greater importance of effort. It's true, for example, that gains on the outcome measures related to intellectual competencies and to general education are related to how long one has been in college--the gains reported by seniors are significantly greater than the gains reported by freshmen. But the whole truth is that freshmen whose quality of effort scores for intellectual/academic experiences are high (above average) report greater gains in intellectual competencies and in general education than juniors or seniors whose quality of effort scores are low (below average). It is also true that sheer time spent on academic work (number of hours a week) is related to progress toward objectives related to general education, to intellectual comptencies, and to grades. But the whole truth is that students who spend a lot of time at a low level of quality make less progress than students who spend fewer hours at a high level of quality; and students who spend about 40 hours a week of

high quality effort get better grades than students who spend 50 or more hours of low quality effort.

These relationships between time, quality of effort, grades, and gains are documented in the next two sets of figures, based on more than 7700 students from 30 colleges and universities.

Length of Time in College Vs. Grades and Gains

Year in College and Quality of Academic/Intellectual Experiences	Grades		Gains in Intellectual Competences		Gains in General Education	
Freshmen	2.9		10.6		11.7	
Low QE		2.8		9.8		10.8
High QE		3.1		11.5		12.9
Sophomores	3.1		11.5		12.3	
Low QE		3.0		10.7		11.1
High QE		3.2		12.3		13.5
Juniors	3.2		11.8		12.3	
Low QE		3.0		10.9		11.3
High QE		3.4		12.5		13.2
Seniors	3.3		12.1		12.5	
Low QE		3.1		11.3		11.4
High QE		3.4		12.7		13.3

N = 7720

Note: Grade point averages are 2.0 = C; 3.0 = B; 4.0 = A. Mean scores on the Intellectual Competence and General Education objectives that are different from one another by .3 or more are statistically significant.

Hours Per Week on Academic Activities Vs. Grades and Gains

Hours Per Week and Quality of Academic/Intellectual Experiences	Grades		Gains in Intellectual Competence		Gains in General Education	
About 20 hours or less	2.9		10.6		11.2	
Low QE		2.8		10.0		10.5
High QE		3.0		11.8		12.6
About 30 Hours	3.0		11.3		12.2	
Low QE		2.9		10.6		11.3
High QE		3.1		12.1		13.2
About 40 hours	3.3		11.9		12.7	
Low QE		3.2		11.1		11.6
High QE		3.4		12.4		13.4
About 50 hours or more	3.5		12.3		12.6	
Low QE		3.3		11.5		11.2
High QE		3.6		12.8		13.3

Not only does quality of effort have a general predictive value, and a special diagnostic value, as the results thus far presented have shown, it also has what one might call a pervasive value. By this we mean that the range or scope of high quality effort is related to the range or scope of high achievement. The more aspects of the college experience (use of facilities and opportunities) one participates in at an above average level of quality of effort, the more objectives (different goals of higher education) one makes above average progress in their attainment. Breadth of involvement and breadth of attainments go hand in hand.

Of the 14 quality of effort scales in the questionnaire, 12 are answered by everyone (not all students live in a campus residence facility and so do not respond to the Residence scale, and not all students have had a science laboratory course and so do not respond to the Science Laboratory scale. Of the 12 scales applicable to everyone, four are mainly concerned with academic/intellectual activities (course learning, library, faculty, and writing), four are primarily personal and interpersonal (personal experiences, student acquaintences, conversation topics, and conversation level), and four are primarily centered around group facilities and associations (student union, clubs and organizations, athletic and recreational facilities, and cultural facilities related to art, music, and theater). We devised a "breadth index" which is defined as the number of scales (different aspects of campus life) on which a student's score is above the median of some baseline group. This baseline could be the median at one's own institution, or the median of all

student responses at all institutions. Of the 30 colleges and universities from which data had been obtained by the spring of 1980, 24 were selected to form a multi-institutional baseline, chosen because each of them had obtained replies from a good cross-section of students. Students' scores on the breadth index could range from 0 to 12, and in fact do so. Some students invest above average quality of effort on all twelve of the topics and some students invest above average quality on none of the twelve topics. The distribution of breadth scores for 7800 students at these 24 colleges and universities was a normal distribution - one fourth (25%) of the students had a breadth score of 9 or higher; and about the same proportion (27%) had a breadth score of 3 or lower; and the median breadth score (6.4) was almost exactly halfway between 0 and 12.

Using a breadth score of 9 or higher (the upper fourth) as a definition of "high breadth," large differences between one college and another were revealed. For example, at one college only 10% of the student body had a breadth of 9 or higher; whereas at another college 61% of the students had a breadth score of 9 or higher. Clearly at some colleges the vigor and vitality of what students put into the college experience covers a much wider range of activities, is much more pervasive, than is true at other colleges. Indeed, the breadth index for a college may be a good indicator of the quality of its undergraduate education program, or at least of the quality of undergraduate student experience at the college.

Evidence that the breadth score might be a good index of the quality of undergraduate education on the campus is suggested by the relationship between breadth scores and outcomes. The rank order correlation, of the 24 institutions studied, between breadth of effort and breadth of outcomes

is .80. Breadth of outcomes is the number of outcomes or objectives in which the institution's score (percent of its students reporting very much or quite a bit of progress) was at or higher than the score for the composite of all institutions in the study. So, the breadth of above average effort was clearly associated with the breadth of above average attainments--the broader the scope of effort the broader the range of outcomes.

Other evidence of the relation between breadth scores and attainment is shown in the following figures--comparing the percent of students with low breadth scores vs. high breadth scores with respect to their reported progress toward each of 17 objectives.

RELATIONSHIPS BETWEEN BREADTH SCORES AND ATTAINMENT

Objectives	Percent of students reporting "quite a bit" or "very much" progress toward various objectives: Among students with low breadth scores (0-3)	Among students with high breadth scores (9-12)
Goals related to general education		
breadth of knowledge	52	80
art, music, theater	14	48
literature	14	55
writing	33	69
philosophies and cultures	37	78
Goals related to intellectual competence		
specialization	51	74
analytical thinking	50	78
ability to synthesize	53	87
ability to find information	61	91
Goals related to science		
understanding science and experimentation	27	41
understanding science and technology	28	42
quantitive skills	35	53

Objectives	Percent of students reporting "quite a bit" or "very much" progress toward various objectives	
	Among students with low breadth scores (0-3)	Among students with high breadth scores (9-12)
Goals related to personal and interpersonal understanding		
clarifying values	44	85
self-understanding	58	89
understanding others	54	89
function as a team member	30	66
develop good health habits and physical fitness	22	51

On all objectives the percent of students reporting very much or quite a bit of progress is much greater among the students with high breadth scores. On many objectives the percentage for the high breadth group is more than twice as large as the percentage for the low breadth group. This again suggests the pervasive value of the concept of quality of effort, for it has an influence on every one of the objectives.

In a local study, based on the responses of a good cross-section of undergraduates at UCLA, interrelations among environment, effort, satisfaction, and attainment were explored. These interrelationships further illustrate both the predictive and the pervasive value of quality of effort. For the UCLA study we used students satisfaction with college as the criterion. It seems reasonable to expect that people who don't like what they are doing and don't like where they are probably are not putting much effort into the activity or getting much out of it. The two questions asking about students satisfaction had the following answers at UCLA:

How well do you like college?

I am enthusiastic about it	38%
I like it	46%
I am more or less neutral about it	12%
I don't like it	3%

If you could start over again, would you go to the same college you are now attending?

Yes, definitely	38%
Yes, probably	43%
Probably, no	14%
No, definitely	4%

By giving 4 points to the most favorable response, 3 points to the next most favorable response, etc. for each question, and adding the points, the following distribution was obtained:

Satisfaction score		
8 points	22%	very satisfied
7 points	27%	
6 points	28%	satisfied
5 points	13%	neutral to negative
4 points	7%	
3 points	2%	
2 points	1%	

The meanings of scores 8 or 7 at the most favorable end of the scale, and of scores of 2 or 3 at the most unfavorable end are clear. Students who are very satisfied with their experience at UCLA comprise 49% of the group, in contrast to 3% who are very dissatisfied. A score of 6, obtained by 28% of the group, can be characterized as "satisfied," for it nearly always consists of people who said "I like it" to the first question, and "probably yes" to the second question. Anyone getting a score of 5 or lower must have answered at least one question negatively or neutrally. Parenthetically, college students across the country appear to be rather well satisfied--the results from 10,000 undergraduates at 40 colleges and universities showing 42% in the "very satisfied" bracket and 4% in the "very dissatisfied" bracket.

In the UCLA study we divided the students into three groups, as defined above - very satisfied, satisfied, and neutral to negative--and then compared the responses of these three groups with respect to the quality of effort scores on all 14 aspects of the college experience, their characterizations of the college environment on all of the environment ratings, and their ratings of progress toward all of the objectives. On every quality of effort scale, and on every characterization of the environment, and on reported progress toward every objective, the highest (most favorable) mean scores were made by the students who were "very

satisfied" with UCLA, the next best scores were made by students who were "satisfied," and the lowest scores were made by those who were "neutral to negative." There were no exceptions to this pattern.

Students who are most satisfied with college put the most into it and get the most out of it. Using satisfaction with college as the criterion, and then determining which variables of all the ones included in the questionnaire have the highest relationship to that criterion (best predict or best explain it), the two most influential variables were as follows: first, students gains in the group of objectives we have described as intellectual competence, and second, environment in which relationships among students were characterized as friendly and supportive. So, when students are very satisfied they believe they are developing their intellectual powers, and find the environment to be friendly and supportive. Since we don't really know the direction of these relationships we can also state the generalization another way: when students are making progress in the development of their intellectual powers, and when their experience in the environment is characterized by friendly and supportive relationships with other students, they are very satisfied with college.

These results, together with ones presented earlier, reveal a circle of influence on what one can surely call excellence: high quality effort is the best predictor of high quality achievement; high quality achievement in intellectual powers is the best predictor of high satisfaction with college. And satisfaction as well as achievement is further enhanced in an atmosphere that is friendly and supportive.

Another local study at UCLA (Lara, 1981) of community college transfer students included in it some comparisons between the quality of

effort at UCLA of transfer students who had persisted and those who had dropped out, and also the quality of effort of these two groups when they were in community college. The academic quality of effort scales were used in this study--course learning, library, writing, and faculty contacts. The population included all community college transfers to UCLA in the fall of 1977. Sixty one percent of them were located and responded to a questionnaire in the spring of 1979--824 respondents were still enrolled at UCLA and 312 had dropped out. The students indicated how often they had engaged in the various activities at UCLA and also how often they had engaged in those same activities when they were in community college. Other parts of the questionnaire asked about some environment characteristics at community colleges and at UCLA, and progress toward certain objectives at community college and at UCLA. On the quality of effort scales for librabry, writing, and course learning, the scores of both the dropouts and the persisters were higher at UCLA than they had been at the community college; but the difference was much greater for persisters than for dropouts. In other words, the dropouts had increased their quality of effort somewhat, but not nearly enough and not nearly as high as the persisters. For example, on the Course Learning scale, the percent scoring 26 or higher on the scale was 55% at UCLA for those who had dropped out compared with 37% when they were in community college. In contrast, the corresponding percentages for those who were persisters at UCLA was 50% when they were in community college, increasing the 80% at UCLA. On the library scale the persisters had 65% scoring 21 points or above at UCLA, compared with 31% for the dropouts. For both groups the percentages represented an increase over what their quality of effort in library use had been at the community college--the

dropouts having increased from 16% to 31%, and the persisters increasing from 28% to 65%.

These differences between community college and the university are also reflected in students ratings of progress toward important objectives. In community college, less than a third of the transfer students felt they had made very much or quite a bit of progress toward the objective of ability to think analytically and logically (34% among those who subsequently persisted at UCLA and 27% among those who subsequently dropped out). At UCLA, among those who persisted, 85% claimed very much or quite a bit of gain, compared with 46% among those who had dropped out.

From these examples, and from many others like them in the complete study, two generalizations can be made: first, the quality of academic effort needed for persistence at the university was much higher than the quality of effort needed at the community college to become eligible for transfer; and second, compared with the students who later dropped out, the students who were successful at the university had not only made a much larger increase in their prior quality of effort but also had reached a much higher absolute level. One of the successful transfer students put it this way: "I think it's up to the individual to realize that UCLA is not a joke. If he or she bears down and pushes himself or herself they will get the most out of what UCLA has to offer. I enjoyed it, and I am not that smart, but I worked hard. And that's what counts."

This student's comment brings us back to where we started this paper: "If students expect to benefit from what this college or university has to offer they have to take the initiative." The quality of effort scales are, in a sense, measures of initiative. With a few inadvertent

exceptions, nearly all of the activities in the quality of effort scales are essentially voluntary. They are not assigned or required; and it may be this very feature that accounts for their significant relation to high quality achievement, and their significant value in higher education. College is basically a voluntary activity. You don't have to go to college. It may be necessary to go if you want to be a dentist, but no one says that you have to be a dentist. After you get to college, you don't have to browse in the library, you don't have to make appointments to talk with faculty members, you don't have to go to class, you don't have to make outlines from your class notes and readings, you don't have to go to concerts, you don't have to work on a committee, you don't have to ask other people to read something you have written to see whether it was clear to them, you don't have to have serious discussions with students whose personal values are very different from yours. By the words "don't have to" I mean that no one is requiring you to do so or checking up on you to make sure you have. This is why the quality of effort, which one might also think of as the quality of initiative, is so important at the college level--so highly predictive of achievement, so diagnostic for understanding various relationships, and so pervasive in the college experience.

How useful it may be to measure "quality of effort" in high school, and in elementary school, may depend on how much opportunity there is for "pupil initiative" in those settings. Pupil behavior in the elementary school classroom, and the elementary school setting in general, is primarily planned and controlled by the teacher. It is the teacher who decides what activities will be done, and when, and who helps them along the way. But, there are surely also opportunities for pupil intitiative,

for independence, and for accepting responsibility. Observers and researchers who are familiar with elementary schools could devise ways to record pupil activities that reflect quality of effort in using elementary school facilities. The evidence revealed by such measurement may well be predictive of achievement at the next level of education where the opportunities for initiative are greater, and where the connection between effort and attainment is probably stronger. In high schools more independence and adaptation are required for success. One has different teachers for different subjects; one moves from one location to another; surveilance of whether one is doing one's work is not as close as it was in elementary school where one was in the same classroom with the same teacher day in and day out.

It may well be true that whenever education is compulsory, teachers feel compelled to plan and manage and monitor the activities of pupils in considerable detail. The goal is often mastery, by as many as possible, of explicitly described tasks.

In higher education such detailed determination of how students spend their time is rarely found. The developmental and educative process from childhood to adolescence to adulthood--which is to say from elementary school to secondary school to college--is not only one of acquiring more and more knowledge but also one requiring more and more initiative. It may be useful to think of the results (success) at each level as "readiness to take the next step."

From evidence at the college level that quality of student effort predicts progress toward the attainment of important objectives better than any other activity or characteristic, and evidence that the quality of effort exerted in community college was not enough for persistence

and success at the university, readiness to take next step from one educational level to the next may be viewed as the individual's readiness to invest time and effort in the events and experiences that are intended to facilitate learning and development.

Whatever applicability the concept of quality of effort may have in other educational settings its value for higher education is buttressed by the evidence given in this paper. The gist of that evidence is really quite simple: college can't <u>give</u> you an education; but if you go to college, and fully use the facilities and opportunities it provides, you can <u>get</u> an education--indeed, a very good one.

CHRONOLOGICAL LIST OF REPORTS ABOUT THE
COLLEGE STUDENT EXPERIENCES QUESTIONNAIRE

1. Shaver, Jon
   An Examination of the Quality of Effort that College and University Students Invest in their Own Learning and Development. Los Angeles: UCLA Ed.D. Dissertation, 1978.

2. Pace, C. Robert
   "Scales for Measuring the Quality of Student Effort: A New Dimension for Research in Higher Education." A paper given at the annual convention of the American Educational Research Association, April 1979, in San Francisco. (14 pages Xerox)

3. Pace, C. Robert
   "The Other Side of Accountability: Measuring Students' Use of Facilities and Opportunities." A paper given at the annual convention of the Association of Institutional Research, May 1979, in San Diego. (16 pages Xerox)

4. Pace, C. Robert
   Measuring Quality of Effort: A New Dimension for Understanding Student Learning and Development in College. Los Angeles: UCLA Laboratory for Research on Higher Education, October 1979. (115 pages Xerox)

5. Friedlander, Jack
   "The Importance of Quality of Effort in Predicting Student Attainment." A paper given at the annual convention of the Association for the Study of Higher Education, March 1980, in Washington, D.C. (24 pages Xerox)

6. Pace, C. Robert
   "Measuring the Quality of Student Effort" pages 10-16 in Improving Teaching and Institutional Quality, Current Issues in Higher Education, 1980, No. 1, American Association for Higher Education, Washington D.C.

7. Pace, C. Robert
   "Student Effort and Personal Development." A paper given at the annual convention of the National Association of Student Personnel Administrators, April 1980, in Los Angeles. (20 pages Xerox)

8. Friedlander, Jack
   The Importance of Quality of Effort in Predicting Student Attainment. Los Angeles: UCLA Ph.D. Dissertation, 1980.

9. Porter, Oscar; Snyder, Mary Beth; Friedlander, Jack; and Pace, C. Robert
UCLA Undergraduates: Highlights from a Survey of Their Activities, Attitudes, and Attainments. Los Angeles: UCLA Laboratory for Research on Higher Education, June 1980.

A series of brief separate reports as follows:

Quality of Student Effort in Course Learning (3 pages)
Students' Use of the Library (3 pages)
Experiences in Writing (3 pages)
Experiences with Faculty (3 pages)
Residence and the College Experience (3 pages)
The Transfer Students: Are They Different? (3 pages)
Satisfaction with College (4 pages)
Relationships Between Effort, Environment, and Attainment (2 pages)
Breadth of Student Effort (3 pages)
Predicting Students' Progress (3 pages)
Information about the Measures in the College Student Experiences Questionnaire (6 pages)
(Total set of reports, 38 pages Xerox)

10. Higher Education Research Institute
Composite Comparative Data, College Student Experiences Questionnaire, 1979 and 1980. Los Angeles: Higher Education Research Institute, August 1980. (22 pages Xerox)

11. Friedlander, Jack
"Influences of Length of Time in College Versus Quality of Time on College Student Development." A paper given at the annual convention of the American Educational Research Association, April 1981, in Los Angeles. (15 pages Xerox)

12. Lara, Juan
"Differences in Quality of Academic Effort Between Successful and Unsuccessful Community College Transfer Students." A paper given at the annual convention of the American Educational Research Association, April 1981, in Los Angeles. (20 pages Xerox)

13. Pace, C. Robert and Friedlander, Jack
"The Meaning of Response Categories: How Often is 'Occasionally,' 'Often,' and 'Very Often'?" A paper given at the annual convention of the American Educational Research Association, April 1981, in Los Angeles. (19 pages Xerox)

14. Pace, C. Robert
"Measuring the Quality of Undergraduate Education." A paper given at the annual convention of the American Educational Research Association, April 1981, in Los Angeles. (15 pages Xerox)

15. Higher Education Research Institute
Composite Comparative Data, College Student Experiences Questionnaire, 1979, 1980, and 1981. Los Angeles: Higher Education Research Institute, September 1981.